



“Gheorghe Asachi” Technical University of Iasi, Romania



VALORIZATION OF TYRES WASTE PYROLYSIS RESIDUE IN LIGHTWEIGHT MATERIALS

Fernanda Andreola*, Luisa Barbieri, Isabella Lancellotti

Department of Engineering “Enzo Ferrari”, University of Modena and Reggio Emilia, via P. Vivarelli, 10, 41125 - Modena, Italy

Abstract

The aim of this study is to investigate an innovative way to utilize the char obtained from tyres pyrolysis, in order to realize lightweight materials for building. Pyrolysis residue, mixed with three types of waste glass, has been used as raw material to obtain lightweight materials, exploiting its capability to behave as foaming agent. The results demonstrate that the pyrolysis char is a good foaming agent for the mixtures 50/50 with glassy sand and packaging glass waste, thermal treated at 900°C for 45 minutes with degassing isotherm (500°C, 60 min). At these conditions, the samples obtained showed thermal behavior intermediate between an insulating commercially brick and a commercial refractory such as apparent density values lower than 1 g/cm³, compared to traditional ceramic material where density values are higher than 2 g/cm³. It can therefore be concluded that the materials produced have suitable properties for use in buildings as thermal and acoustic insulating.

Key words: char, lightweight materials, pyrolysis, tyre waste

Received: January, 2016; Revised final: June, 2016; Accepted: July, 2016

* Author to whom all correspondence should be addressed: e-mail: andreola.fernanda@unimore.it; Phone: +39- 059-2056237; Fax: +39- 059-2056243